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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,105	07/03/2001	David Hugh Jones	12020-003002	1882

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EXAMINER	
NGUYEN, DAVE TRONG	
ART UNIT	PAPER NUMBER
1632	

DATE MAILED: 01/30/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/898,105	Jones
Examiner	**Art Unit**
Dave Nguyen	1632

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Nov 6, 2002* .

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under ***Ex parte Quayle***, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *32-56* is/are pending in the application.

4a) Of the above, claim(s) *52-56* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *32-51* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *Oct 3, 2001* is/are a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☒ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Applicant's election without traverse of Group I claims, claims 32-51, the species of poly(DL-lactide-co-glycolide), and a rotavirus VP1 polypeptide in Paper No. 8 is acknowledged.

Claims 52-56 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected claimed invention.

Claims 32-51, to which the following grounds of rejection are applicable, are pending.

Claim 43 is objected because on the basis of applicant's description, the "BP1" as recited on line 6 of the claim is a typographical error. A correction from the "BP1" to -- VP1 -- is required.

Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119 as follows:

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78).

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119 (a)-(d) based on the application PCT/GB96/02770 filed in WIPO on November 11, 1996, and on the application 9709900.6 in United Kingdom on May 15, 1997. It is noted, however, that applicant has not acknowledged that the certified copies of the PCT/GB96/02770 and 9709900.6 have been received in this instant application or in any of the parent cases, as required by 35 U.S.C. 119(a)-(d).

In addition, Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119 as follows:

The second application must be an application for a patent for an invention which is also disclosed in the first application (an application where this instant application has a claim of priority); the disclosure of the invention in the parent application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *In re Ahlbrecht,* 168 USPQ 293 (CCPA 1971). The priority application, UK 9523019.9 filed on 11/09.95, does not contain support or description of newly added phrase "a solution of DAN has an alcohol content of 1 to 40%". Thus, the priority application UK 9523019.9 does not contain sufficient description of the newly added limitation in claim 25, and therefore,

priority of the subject matter being sought in claim 25 and claims dependent therefrom can only be granted to the filing date of the parent 09/079,400 application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 32-42, 44-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathiowitz *et al.* (WO 95/24929) taken with Yan *et al.*, Journal of controlled Release 32, 231-241, 1994), and Yeh *et al.* (WO 95/35097).

The claims are directed to a composition comprising a biodegradable polymer microparticle, composed mainly of poly(DL-lactide-co-glycolide) comprising:

- an aqueous solution of DNA comprising 1-40% of an alcohol; wherein the DNA is a plasmid encoding any immunogen or antigenic polypeptide.

Mathiowitz *et al.* teach a method of encapsulating an aqueous solution of DNA in a polymer, wherein the polymeric microparticle is between nanometers and one millimeter in diameter, more preferably between 0.5 and 100 microns (pages 9 and 11), and wherein the DNA is circular or plasmid DNA encoding an immunogen or antigenic polypeptide (page 33, last paragraph). Polymers including poly(DL-lactide-co-glycolide) is also disclosed in Mathiowitz. Regarding methods for making the polymeric microparticles, Mathiowitz *et al.* teach at page 9, last paragraph, that the microparticles or polymeric matrices can be formed by solvent evaporation, solvent extraction and other methods known to those skilled in the art, that the size range can be routinely adjusted by methods of making polymeric microparticles known in the prior art. For example, Mathiowitz *et al.* teach:

"the DNA, either in soluble form or dispersed as fine particles, is added to the polymer solution, and the mixture is suspended in an aqueous phase that contains a surface active agent such as poly(vinyl alcohol)." (second paragraph of page 10).

Mathiowitz *et al.* does not teach explicitly that the aqueous solution of DNA contains 1-40% of alcohol content.

Yan *et al.* is one of many exemplified references that teach that (water-in-oil)-in-water emulsion techniques for making poly(lactide-co-glycolide) (PLG) microparticles are known in the art at the time the invention was made (pages 232 and 233). Furthermore, Yan *et al.* teach that by using (water-in-oil)-in-water emulsion techniques wherein vortex mixing is employed, the resultant microparticles were smaller and very homogeneous with the core material evenly dispersed throughout the polymeric matrix (page 237, column 1). Yan *et al.* further teach that the small PLG microparticles are suitable for use in oral administration, and that the (water-in-oil)-in-water emulsion technique, wherein solvent extraction is employed, consistently yields 80% encapsulation efficiency (page 237, column 2, second paragraph, Table 3). Regarding the extraction of the organic solvent in the double (water-in-oil)-in-water emulsion, Yan *et al.* teach that an further aqueous phase comprising 5% isopropanol is employed for the extraction (page 232, column 2, last paragraph).

In addition, Yeh *et al.* teach on page 30 that an aqueous solution of DNA containing 20% contents of ethanol (volume/volume) is effective for use in an emulsification technique to encapsulate DNA in a polymeric microparticle.

It would have been obvious for one of ordinary skill in the art to have employed any known solvent extraction technique including double (water-in-oil)-in-water emulsion techniques, as exemplified in the Yan *et al.* reference in the making of the polymeric microparticles of Mathiowitz *et al.*, with a reasonable expectation of success, particularly since Yan *et al.* is one of many references that disclose the advantages of employing double (water-in-oil)-in-water emulsion techniques to make encapsulated polymeric microparticles. One of ordinary skill in the art would have been motivated to have employed any double (water-in-oil)-in-water emulsion technique in the method of Mathiowitz *et al.* because

- Mathiowitz *et al.* teach that microparticles or polymeric matrices can be formed by solvent evaporation, solvent extraction and other methods known to those skilled in the art;
- Yan *et al.* further teach that the small PLG microparticles are suitable for use in oral administration, and that the (water-in-oil)-in-water emulsion technique, wherein solvent extraction is employed, consistently yields 80% encapsulation efficiency.

It would also have been obvious for one of ordinary skill in the art to have employed an aqueous solution comprising an alcohol content of 1-40%(v/v) and DNA in the double (water-in-oil)-in-water emulsion method as taught by the combined Mathiowitz *et al.* and Yan *et al.* references. One of ordinary skill in the art would have been motivated to have employed the aqueous solution containing DNA and 1-40% of alcohol content (v/v) in an emulsion technique because Mathiowitz *et al.* teach that "the DNA, either in soluble form or dispersed as fine particles, is added to the polymer solution, and the mixture is suspended in an aqueous phase that contains a surface active agent such as poly(vinyl alcohol)", and/or because Yeh *et al.* teach on page 30 that an aqueous solution of DNA containing 20% contents of ethanol (volume/volume) is effective for use in an emulsification technique to encapsulate DNA in a polymeric microparticle.

Thus, the claimed invention as a whole was *prima facie* obvious.

Claims 32, 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathiowitz *et al.* (WO 95/24929) taken with Yan *et al.,* Journal of controlled Release 32, 231-241, 1994), Yeh *et al.* (WO 95/35097), and further in view of Estes (US Pat No. 5,891,676).

The rejection of the base claims under 35 USC 103(a) as being unpatentable over Mathiowitz *et al.* taken with Yan *et al.* and Yeh *et al.* is applied here as indicated above.

To the extent that the combined cited references do not teach the use of a rotavirus VP1 polypeptide encoded nucleic acid as the immunogen encoded DNA in the delivery polymeric composition, Estes teaches that rotavirus VP1 polypeptide is an effective immunogen for use in DNA immunogenic composition (entire reference).

It would have been obvious for one of ordinary skill in the art to employ a rotavirus VP1 polypeptide encoded nucleic acid as the immunogen encoded DNA in the delivery polymeric composition of the combined cited references. One would have been motivated to do because Estes teaches that rotavirus VP1 polypeptide is an effective immunogen for use in DNA immunogenic composition, and because the combined cited references teach as a whole that the polymeric delivery composition can be used to enhance the delivery and activity of any immunogen encoded DNA to a host desired for the treatment.

Thus, the claimed invention as a whole was *prima facie* obvious.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Omum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 32-51 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,270,795, and further in view of Estes. Although the conflicting claims are not identical, they are not patentably distinct from each other because

Both sets of claims enbrace a composition comprising a biodegradable polymer microparticle, composed mainly of poly(DL-lactide-co-glycolide) comprising:

- an aqueous solution of DNA comprising 1-40% of an alcohol; wherein the DNA is a plasmid encoding an immunogen.

To the extent that the patent claims do not claim specifically a rotavirus VP1 polypeptide encoded nucleic acid as the immunogen encoded DNA in the delivery polymeric composition, Estes teaches that rotavirus VP1 polypeptide is an effective immunogen for use in DNA immunogenic composition (entire reference).

It would have been obvious for one of ordinary skill in the art to employ a rotavirus VP1 polypeptide encoded nucleic acid as the immunogen encoded DNA in the delivery polymeric composition as claimed in the patent claims. One would have been motivated to do because Estes teaches that rotavirus VP1 polypeptide is an effective immunogen for use in DNA immunogenic composition.

As such, the examined claims and the patent claims are obvious variant of one another.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Dave Nguyen* whose telephone number is **(703) 305-2024**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Deborah Reynolds*, may be reached at **(703) 305-4051.**

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center number is **(703) 305-7401**.

Any inquiry of a general nature or relating to the status of this application should be directed to the *Group receptionist* whose telephone number is **(703) 308-0196**.

DAVE T. NGUYEN
PRIMARY EXAMINER